

REMARKS

Claims 1-32 are pending in the application. Of these, Claims 1-14 and 23-31 are withdrawn from consideration. Claims 15-22 and 32 have been examined and stand rejected.

Amendment to the Figures

FIGURES 3, 4, and 10-12 have been amended to incorporate the reference numerals from the written description. FIGURE 12 has additionally been amended to schematically represent an adjustable cutting knife. Applicants respectfully request the approval of the Examiner to enter the drawing amendments. The amendments to the figures are fully supported by the written description. Thus, no new matter has been added.

Amendment to the Written Description

Amendments have been made to the written description for clarification. Thus, no new matter has been added. The Examiner is thanked for the careful review of the written description and figures.

The Rejection of Claims 15-22 Under 35 U.S.C. § 112, First Paragraph

Claims 15-22 are rejected under 35 U.S.C. § 112, first paragraph, for containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The Examiner states that the specification and drawings do not appear to provide support for an adjustable cutting device as set forth in Claim 15. Applicants respectfully traverse the rejection.

On page 19, lines 22-24, the specification describes that "[t]he distance between the knife 1130 and the adjacent surface of the housing 1106 can be varied to adjust the thickness of the foodstuff portion 1100 as desired." Accordingly, the specification, of which the drawings are a part, adequately describes the claimed invention. Based on this description, FIGURE 12 has been amended to schematically represent an adjustable cutting device. Accordingly, withdrawal of the rejection of Claims 15-22 is respectfully requested.

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The Rejection of Claims 15-22 Under 35 U.S.C. § 112, Second Paragraph

Claims 15-22 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Applicants respectfully traverse the rejection.

In any event, Claims 15, 16, and 22 have been amended to clarify the invention and not for any reason related to patentability. Accordingly, withdrawal of the rejection of Claims 15-22 is respectfully requested.

The Rejection of Claims 15-22 and 32 Under 35 U.S.C. § 103(a)

Claims 15-22 and 32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Carruthers (U.S. Patent No. 4,446,601). The Examiner states that Carruthers discloses a cutting apparatus with almost every structural limitation of the claimed invention but lacks a cutting device positioned along/below the second conveyor. Having appreciated that Carruthers fails to disclose all the elements of Claim 1, the Examiner relies on his personal knowledge by taking official notice that cutting devices in such a location are old and well-known in the art for performing a cutting operation during conveying of the workpiece. The Examiner further states that it would have been obvious to one having ordinary skill in the art to provide an additional cutter along/below the second conveyor of Carruthers for various known reasons, for example, to perform a second, horizontal cutting of the workpiece to provide a thinner product.

The Examiner also appreciates that Carruthers lacks various other features of the claimed invention, including a diagonal portion of the second conveyor, the vacuum source and the pressure source, and an additional conveyor. Again, relying on his own knowledge, the Examiner takes official notice that conveyors having differently oriented portions including diagonal portions are old and well-known in the art for conveying a workpiece in a desired direction. Official notice is presumed to be taken for providing the vacuum source where the workpiece is to be maintained on the conveyor, and the pressure source to positively remove the workpiece from the conveyor at a desired location. Further, official notice is taken by the Examiner of providing additional conveyors for various known benefits including extending the

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product line to a desired point in a manufacturing/processing facility. Based on these reliances, the Examiner concludes it would have been obvious to provide these features lacking in Carruthers. Applicants respectfully traverse the rejection.

A *prima facie* case of obviousness requires a suggestion or motivation either in the references or in the knowledge generally available to modify a reference or to combine references. There must be a reasonable expectation of success, and all the claim limitations must be taught or suggested by the prior art references. Applicants believe a *prima facie* case of obviousness has not been established.

The Examiner has relied on personal knowledge rather than any reference to supply missing claim limitations. The Examiner has at least failed to show prior art references that teach or suggest the claim limitations that are missing from Carruthers, or how those references can be combined. Furthermore, the suggestion or motivation to modify and combine references cannot be based on hindsight from a reading of applicants' own disclosure. Claim 15 recites an "adjustable cutting device positioned along the second conveyor run at a selected distance from the second conveyor run to cut the food stuff portions being carried by the second conveyor run to a desired thickness."

The Examiner's motivation for modifying the reference is presumably to perform a second, horizontal cutting of the workpiece to provide a thinner product. Contrary to the claimed invention, Carruthers provides an apparatus for cleaning squid bodies. The apparatus described in Carruthers involves slitting the squid body in half. In Carruthers, a rotating brush scrubs one side of the squid body while an inverted opposite rotating brush cleans the second side opposite of the first side. It is unreasonable to conclude that it is obvious to add a second horizontal cutter to provide a thinner product, when the entire object of Carruthers is to clean squids rather than to cut them. There is simply no teaching or suggestion that the object of Carruthers is to provide a thinner product. Thus, any motivation or suggestion to add a horizontal cutter at the second conveyor could only have resulted from hindsight from reading the applicant's disclosure.

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Claims 15-17, 19-22, and 32 appear to have been rejected based on the Examiner's personal knowledge. Claim 18 appears not to have been discussed. It is difficult for applicants to address the merits of the Office Action when the missing claim limitations are dismissed simply by taking official notice or by remarking that the claim limitations are well-known rather than by supplying references showing the missing claim limitations.

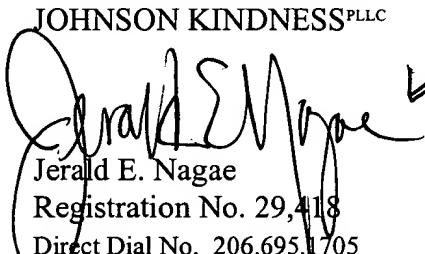
Accordingly, the Examiner has not established a *prima facie* case of obviousness. Therefore, the withdrawal of the rejections of Claims 15-22 and 32 is respectfully requested. All statements of official notice or of purportedly known facts are traversed. Should the Examiner maintain the rejection, the Examiner is respectfully asked for citations to references in support of such statements and to provide a suggestion or motivation for combining the cited references.

CONCLUSION

Based on the foregoing amendments and remarks, applicants respectfully submit that all the claims are allowable. If the Examiner has any further questions, the Examiner is invited to contact the applicants' attorney at the number provided below.

Respectfully submitted,

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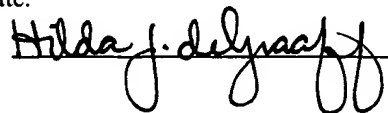
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Enclosures:

Figures 3/5, 4/5 and 5/5, with markings
Replacement formal drawings 3/5, 4/5 and 5/5

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Date: Jan. 10, 2003



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Sn 09 1/6/19, 424

*VERSION WITH MARKINGS TO SHOW CHANGES MADE JANUARY 10, 2003

In the Drawings:

FIGURES 3, 4, and 10-12 have been amended as shown in the marked copies of the figures and replacement originals. Applicants respectfully request the approval of the Examiner to enter the drawing changes. No new matter has been added to the drawings.

In the Specification:

The paragraph beginning at page 7, line 34 has been amended to read as follows:

A preferred embodiment of a method for portioning foodstuffs in accordance with the present invention is shown in FIGURE 1. The method starts at 100 and includes the step 102 of scanning the foodstuff to be portioned. Followed by the step 103 of generating a three dimensional map of the foodstuff. Input 106 depicting a form of a predetermined shape is compared with the map, and a cutting path is determined in step 104 comparing the generated three dimensional map of the foodstuff with one or more desired shapes which are stored in the memory of a computer. Following is a step 108 of cutting the foodstuff in one direction to fix at least one dimension of the foodstuff. Followed by a decision-making step 110 of determining whether the foodstuff is within the tolerance limits or whether the foodstuff portion has moved during the first cutting step 108. If the foodstuff portion has moved during the cutting step 108, the foodstuff will be rescanned in step 112 and in step 114, a two dimensional image of the foodstuff will be generated. If the foodstuff portion has not moved, a second decision will ask whether the second cut path in two axes has also been determined. If the second cut path has been determined in an earlier step, such as step 104, the foodstuff will be portioned along a second and third axis. Otherwise, input 118 is received and a second cutting path is determined in step 116 coming from either step 116 or step 124. Thereafter follows a step 120 of cutting the foodstuff and the end 122 of the method.

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The paragraph beginning at page 8, line 19 has been amended to read as follows:

Referring to FIGURE 2, in a preferred embodiment of a method according to the present invention, the foodstuff portion 200 will travel on an endless conveyor system including endless conveyor belt 202. An initial step in a method of portioning foodstuff in accordance with the present invention is scanning the foodstuff to be portioned as shown in FIGURE 1. Any number of foodstuffs desired to be portioned may be loaded onto the moving endless conveyor system[202]. The conveyor is suited to carry the foodstuff along a processing line where it may be processed by the various apparatus used to carry out the steps of the present invention.

The paragraph beginning at page 9, line 3 has been amended to read as follows:

A scanner can also include [a] the receiver 208 to receive and detect the amount of radiation attenuated by an object. Attenuation can occur by passing through the object or by reflection from the object. When radiation passes through a foodstuff, a certain amount of radiation is absorbed by the foodstuff through which it passes, therefore there will be a relationship in the amount between the radiation sent to the foodstuff and the radiation received after it has passed through the foodstuff. The cause of absorption is believed to reside in the chemical bonds within the molecules of the foodstuff. Radiation once attenuated can be collected, and converted into a useable form. Photodiodes, for example, may be used to convert an amount of radiation in the visible range into a voltage or current signal. For X-rays, a scintillating material may be used to generate visible light capable of detection by a photodiode. This method is described in U.S. Patent No. 5,585,603 to Vogeley, Jr., which is herein incorporated by reference. Other methods teach the use of a video camera to determine the size and/or shape of a foodstuff. These methods and apparatus are described in Reissue Patent Nos. 33,851 and 33,904 to Rudy et al., which are herein incorporated by reference.

The paragraph beginning at page 11, line 8 has been amended to read as follows:

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In still other alternate embodiments, the computer 210 can be in communication with a network system 230 which allows the computer 210 to talk and share information with other computers. Computer 210 can also drive other periphery hardware besides the scanner system 204. For instance, computer 210 can direct the operation of a conveyor 232, or cutting devices, generally denoted as 234. Finally, computer 210 can receive information from various sensors 236 to guide or direct a multitude of systems.

The paragraph beginning at page 13, line 1 has been amended to read as follows:

In a preferred embodiment of the method of the present invention, a cutting step 108 will follow the comparison step 104 in FIGURE 1. As the foodstuff portion 200 travels on a conveyor system [202], the conveyor 202 will have brought the foodstuff portion to a cutting station 218 as shown in FIGURE 3. The cutting device 220 will be controlled by the computer 210 with the appropriate cutting path determined in an earlier step. Preferably, the cutting device in a method according to the present invention will use a band knife or an oscillating knife if the cut to be made is a long cut, but a high pressure water jet may also be used as well, to cut the foodstuff in accordance with the directions from the computer. Such cutting devices are described in U.S. Patent No. 5,931,178 to Pfarr, which is herein incorporated by reference. Bandsaws and blades are described in U.S. Patent No. 5,937,080 to Vogeley, Jr. et al., which is herein also incorporated by reference. However, other cutting devices, such as high pressure gas or lasers, that are well-known in the art may also be used.

The paragraph beginning at page 15, line 34 has been amended to read as follows:

Referring again to FIGURE 2, an embodiment of a foodstuff 200 to be portioned in three dimensions using a method in accordance with the present invention is shown. A conveyor 202 is suited to carry the foodstuff portion 200, such as a chicken breast, through the various steps of the method. Shown is a representative foodstuff portion 200 with the desired shape [204] 215.

A step in the method of the present invention will have generated a three dimensional map of the chicken breast and the computer will have compared the map with the desired shape. The computer will have determined the most correct fit of the desired shape within the generated map. Shown in phantom are the cutting paths for achieving a foodstuff portion in the desired shape. The chicken breast 200 has a first, a second, and a third dimension representing thickness, width and length, respectively. In a step according to a method of the present invention, the foodstuff portion will be cut along a first path to establish one dimension, such as the thickness, as shown in FIGURE 3. It should be noted that the cutting path need not follow a linear path. The first cutting path may be an arcuate or rounded path. It should also be noted that the first cutting path may make two passes. For example, a first pass may cut along the top of the portion and a second pass will cut along the bottom of the portion. This would be desirable if the chicken breast was not lying exactly prone on the conveyor or if the chicken breast had a portion of bone or other undesirable constituent still attached to it.

The paragraph beginning at page 18, line 13 has been amended to read as follows:

An embodiment of a foodstuff to be portioned in three dimensions using a method in accordance with the present invention is shown in FIGURE 10. FIGURE 10 shows the cutting path along two dimensions, thickness and width. First cutting step 108 can cut along cutting paths 1000 and 1002 to remove regions 1004 and 1006, while second cutting step 120 can cut along paths 1008 and 1010 to remove regions 1012 and 1014. It should also be understood that there exist a third dimension, length, which can be trimmed in the second cutting step 120. In the embodiment, a bone fragment 1005 or other undesired constituent may be avoided by skewing or rotating the desired shape within the generated shape to fit the desired shape in the generated shape, thereby avoiding the bone. The resulting cutting path is skewed or angled to

avoid the undesired constituent. The cutting path to shape the thickness of the portion can be cut by a first and a second pass of the cutting device to portion the top and the bottom surfaces.

The paragraph beginning at page 18, line 27 has been amended to read as follows:

Another embodiment of a foodstuff to be portioned in three dimensions using a method in accordance with the present invention is shown in FIGURE 11. FIGURE 11 shows the cutting path along two dimensions, thickness and width. In the embodiment, a foodstuff portion may be cut into a plurality of desired shapes. The shapes may be arranged into one generated map of the foodstuff via the use of a computer, such that the maximum amount of the foodstuff is utilized. Shown are several desired shapes to be cut from one foodstuff portion. Also shown are multiple cutting paths where several cuts are made by multiple passes of the cutting device or multiple heads. A bone fragment 1007 can also be avoided by fitting desired shapes around the bone fragment.

The paragraph beginning at page 19, line 3 has been amended to read as follows:

FIGURE 12 schematically illustrates how a foodstuff portion 1100 may be cut to a desired thickness in accordance with the present invention. The apparatus 1101 illustrated in FIGURE 12 includes a first conveyor system 1102 for delivering foodstuff portions 1100 to the underside of a vacuum chamber 1104. The vacuum chamber is shown as including a housing 1106 in generally oblong shape having a rounded leading end portion 1107 overlying the conveyor 1102 which transitions to a substantially flat bottom section 1108 spaced above the upper rung of the belt 1110 of the conveyor. At approximately the end of the conveyor 1102 the vacuum chamber housing extends diagonally upwardly along section 1112 to a vertical end wall 1114 of the chamber. The top surface 1116 of the chamber housing [1116] 1106 is substantially flat. A belt 1118 is trained around the top 1116, left end 1107, flat bottom 1108 and diagonal 1112 sections of the vacuum chamber housing, as well as around a drive pulley 1113

positioned outwardly adjacent the end wall 1114 of the chamber housing. The drive pulley is mounted to the wall 1114 by a bracket 1122. The drive pulley can be driven by numerous methods, for instance by an electric motor, hydraulic motor or otherwise.

The paragraph beginning at page 19, line 19 has been amended to read as follows:

The foodstuff portions 1100, being carried by the belt 1118, [is] are trimmed to thickness by a band knife 1130, spaced beneath the diagonal section 1112 of the vacuum chamber. Rather than a band knife, another type of knife, such as an ultrasonic knife, may be utilized. The distance between the knife 1130 and the adjacent surface of the housing 1106 can be varied to adjust the thickness of the foodstuff portion 1100 as desired.

In the Claims:

Claims 15, 16, and 22 have been amended as follows:

15. (Amended) An apparatus for processing foodstuff portions along a first axis, comprising:

a first conveyor run [adapted] to carry foodstuff portions on a first side;

a second conveyor run, spaced from the first conveyor run, and extending along the first conveyor run, the second conveyor run capable of carrying the foodstuff portions from the first conveyor run on a second foodstuff portion side; and

an adjustable cutting device positioned along the second conveyor run at a selected distance from the second conveyor run to cut the foodstuff portions being carried by the second conveyor run to a desired thickness.

16. (Amended) The apparatus of Claim 15, wherein the second conveyor run defines a first [surface] horizontal conveyor run portion located above the first conveyor run and a second [surface on a] diagonal conveyor run portion defining an acute angle with the first conveyor run.

22. (Amended) The apparatus of Claim 15, further comprising a third conveyor run located a spaced distance from the first conveyor run to form a gap therebetween, said third conveyor run being [suitably] located underneath the second conveyor run to carry the trimmed foodstuff portions from the second conveyor run.

In the Abstract:

At page 23, the "Abstract of the Disclosure" section has been replaced with a new abstract.

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Title: THE AXIS PORTIONING METHOD
Inventors: K.S. Kim et al.
Application No.: 09/619,424
Docket No.: DESS114787

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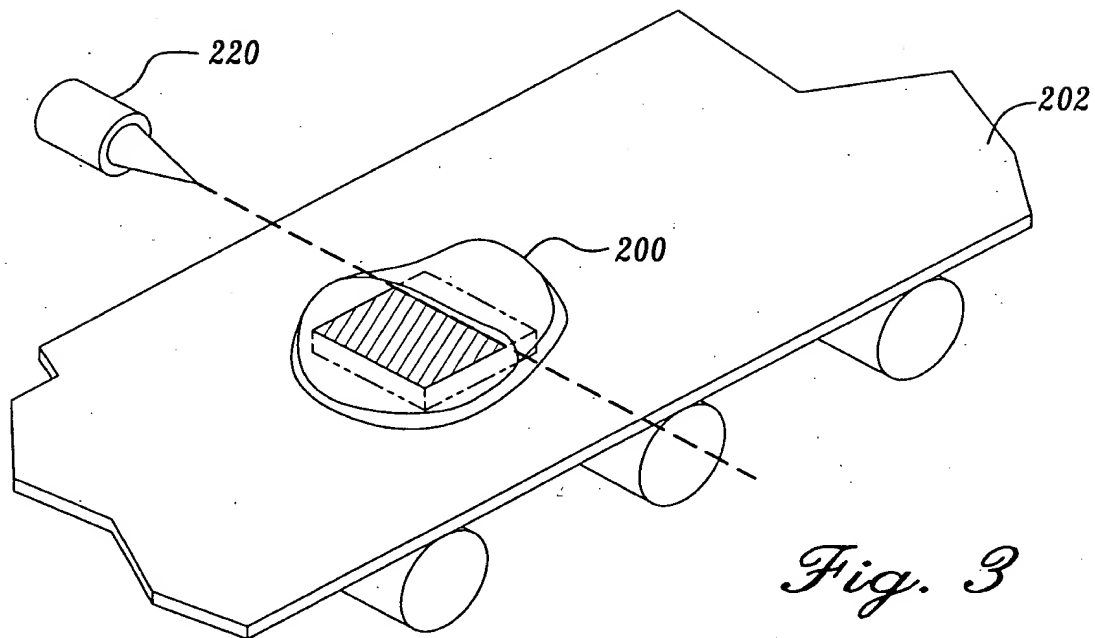


Fig. 3

218

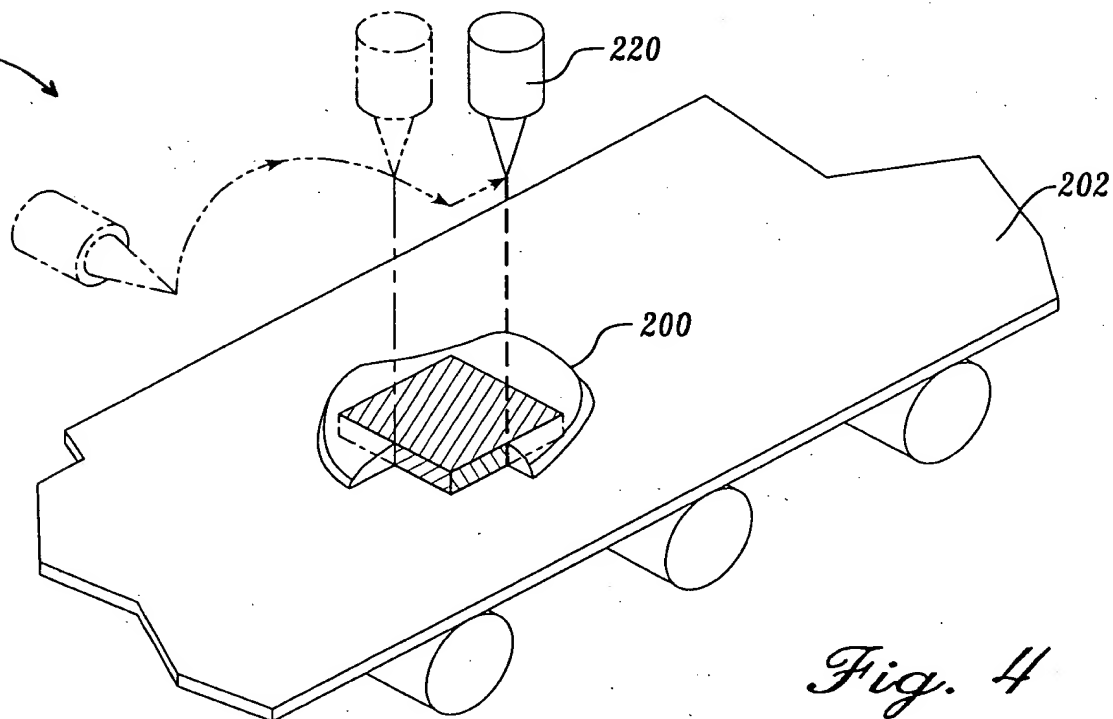


Fig. 4

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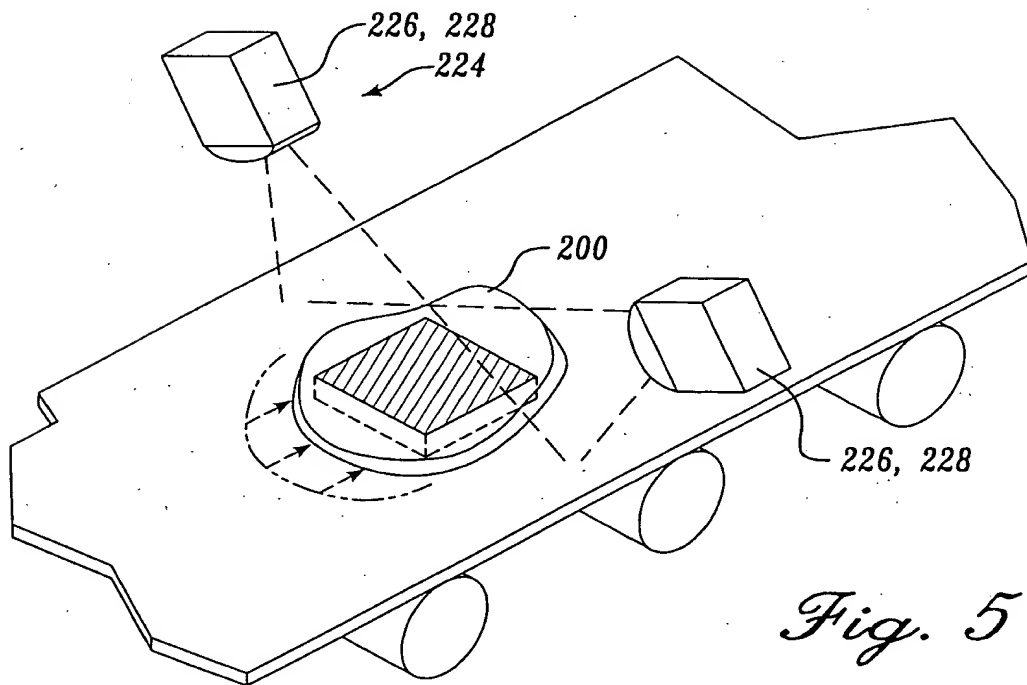


Fig. 5

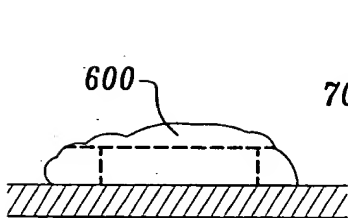


Fig. 6

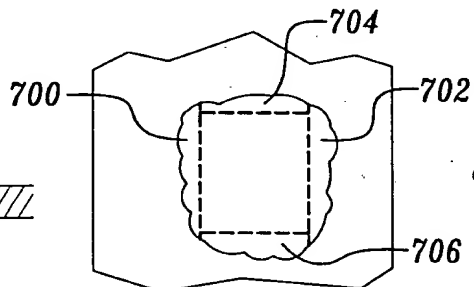


Fig. 7

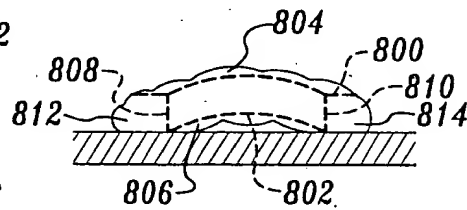


Fig. 8

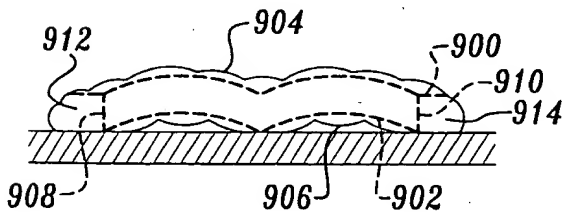


Fig. 9

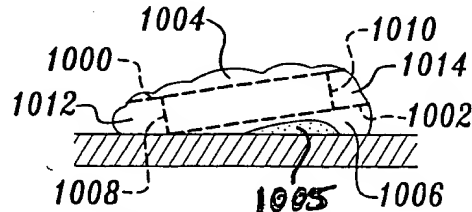


Fig. 10

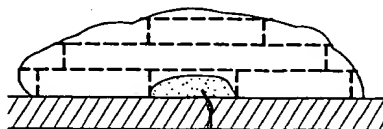


Fig. 11

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Title: THE 3-AXIS PORTIONING METHOD
Inventor: K.S. Kim et al.
Application No.: 09/619,424
Docket No.: DESS114787

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